

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listing of claims in this application:

Listing of claims:

1. (currently amended) A method for heating a medium, said medium comprising hydrocarbonaceous material selected from the group consisting of oil shale, tar sand, oil sand, coal, bitumen, and/or kerogen, comprising: (a) subjecting said medium to an alternating current electrical field generated by a radio frequency waveform applied at a predetermined frequency range that heats said medium; (b) measuring an effective load impedance initially dependent upon the impedance of said medium; (c) comparing said effective load impedance with an output impedance of a signal generating unit that generates said radio frequency waveform; and (d) automatically adjusting said effective load impedance to match ~~an~~ said output impedance of said signal generating unit.
2. (original) The method of claim 1 wherein said output impedance of said signal generating unit is a predetermined constant.
3. (original) The method of claim 2 wherein said output impedance of said signal generating unit is about 50 ohms.
4. (original) The method of claim 1 wherein measuring said effective load impedance includes measuring a voltage across said medium and measuring a resulting electric field developed in said medium.
5. (original) The method of claim 1 wherein measuring said effective load impedance includes measuring a current of said radio frequency waveform applied to the medium.

6. (original) The method of claim 1 wherein measuring said effective load impedance includes measuring a voltage and a current of said radio frequency waveform applied to said medium, and determining a phase angle based on the measured voltage and measured current.
7. (original) The method of claim 1 wherein measuring said effective load impedance includes measuring a forward power level of said radio frequency waveform applied to generate a voltage across and current through said medium and a reverse power level of said radio frequency waveform reflected from an effective load.
8. (original) The method of claim 7, further comprising calculating a voltage standing wave ratio from said forward power level and said reverse power level.
9. (original) The method of claim 8, further comprising repeating the act of automatically adjusting said effective load impedance until said voltage standing wave ratio is about 2:1 or less.
10. (original) The method of claim 8, further comprising repeating the act of automatically adjusting said effective load impedance until said voltage standing wave ratio is about 1:1.
11. (original) The method of claim 1 wherein automatically adjusting said load impedance to said output impedance of said signal generating unit includes adjusting said selected frequency of said applied radio frequency waveform.
12. (original) The method of claim 1 wherein automatically adjusting said effective load impedance to match said output impedance of said signal generating unit includes tuning a tunable impedance matching network connected to an effective load.

13. (original) The method of claim 1, further comprising periodically measuring at least one temperature of said medium during heating, and using said measured temperature in automatically adjusting said effective load impedance to match said output impedance of said signal generating unit.

14. (original) The method of claim 1 wherein of said radio frequency waveform allows for a wavelength to be at least ten times greater than a longest geometrical dimension of the medium under test.

15. (original) The method of claim 1 wherein said selected frequency of said radio frequency waveform is in a range of 1 mhz to 300 mhz.

16. (canceled)

17. (currently amended) The method of claim 1 wherein said ~~medium is of hydrocarbonaceous matter, and of said~~ radio frequency waveform is greater than about 30 mhz.

18. (canceled)

19. (currently amended) The method of claim ~~30~~ 18 wherein said medium is heated while exposed to said reservoir of said carrier medium.

20. (currently amended) The method of claim ~~30~~ 18 wherein said medium that is generally adjacent to said reservoir is heated, said carrier medium in said reservoir being maintained at a temperature range below boiling point of said carrier medium.

21. (currently amended) The method of claim ~~30~~ 18 wherein a desired compound within said medium forms a recoverable layer within said reservoir, and said recoverable layer can be extracted from said reservoir.

22. (canceled)

23. (canceled)

24. (canceled)

25. (canceled)

26. (canceled)

27. (currently amended) A method for heating specific chemical compositions that reside in hydrocarbonaceous material selected from the group consisting of oil shale, tar sand, oil sand, coal, bitumen, and/or kerogen, comprising: maintaining said hydrocarbonaceous material in an alternating current electrical field provided by a radio frequency signal at a frequency not greater than 300 mhz; and controllably heating said hydrocarbonaceous material by automatically maintaining an impedance match between an impedance of said hydrocarbonaceous material and a predetermined constant, said predetermined constant comprising an optional fluid carrier medium (~~for example, water, a saline solution, carbon dioxide~~), which can be unaffected, when desired, by the frequencies being presented to the target elements within the formation

28. (new) The method of claim 27 wherein said medium is selected from the group consisting of water, saline solution and/or carbon dioxide.

29. (new) A method for heating a medium, said medium comprising hydrocarbonaceous material contained in a subterranean environment, comprising: (a) subjecting said medium to an alternating current electrical field generated by a radio frequency waveform applied at a predetermined frequency range that heats said medium; (b) measuring an effective load impedance initially dependent upon the impedance of said medium; (c) comparing said effective load impedance with an output impedance of a signal generating unit that generates said radio frequency waveform; and (d) automatically adjusting said effective load impedance to match the output impedance of said signal generating unit.

30. (new) A method for heating a medium, said medium comprising hydrocarbonaceous material, comprising: (a) exposing said medium to a subterranean reservoir of a carrier medium, said carrier medium being a fluid which allows radio frequency waves to travel to said medium; (b) subjecting said medium to an alternating current electrical field generated by a radio frequency waveform applied at a predetermined frequency range that heats said medium; (c) measuring an effective load impedance initially dependent upon the impedance of said medium; (d) comparing said effective load impedance with the output impedance of a signal generating unit that generates said radio frequency waveform; and (e) automatically adjusting said effective load impedance to match the output impedance of said signal generating unit.